**Achievement of Market-Friendly Initiatives and Results Program**
**(AMIR 2.0 Program)**

**Funded By U.S. Agency for International Development**

# A Critique of the Fourth Actuarial Study: Implications of Using Book Value versus Market Value to Calculate the Rate of Returns for the Social Security Investment Commission

Final Report

**Deliverable for FMD Component, Work Plan Activity No. 638.02**
**Consultancy Agreement No. 278-C-00-02-00210-00**

***September 2003***

*This report was prepared by Dr. Ronald E. Copley, in collaboration with Chemonics International Inc., prime contractor to the U.S. Agency for International Development for the AMIR Program in Jordan.*

## Data Page

Name of Component: Financial Markets Development

Author: Ronald E. Copley

Practice Area: Financial Sector

Service Offering: Pension Fund Reform

List of Key Words Contained in Report:

- Fourth Actuarial Study
- Social Security Corporation
- Book Value
- Hidden Reserves
- Market Value
- Rate of Return
- Subscription Rate
- Contractual Savings
- Velocity of Money
- Liquidity
- Cost of Capital
- Unemployment Rate
- Under-funded Status
- Unemployment

## Abstract

The Social Security Corporation (the “SSC”) has historically calculated investment returns using book values (assets carried at cost on the Corporation’s books) that ignores any capital appreciation of asset values but considers capital depreciation. The Fourth Actuarial Study was based on book values as provided by the SSC. The use of book values exacerbates the pension plan’s under-funded status that requires a higher subscription rate than necessary to achieve a fully funded status. Higher subscription rates, in turn, drain money out of the economy that could be used in the additional production of goods and services and, thus, places upward pressure on the country’s unemployment rate. The purpose of this paper is to explain these relationships.

## Table of Contents

## Executive Summary

The choice of using book values over the use of market values in calculating investment returns has implications for the entire Jordanian economy and financial market. Use of book value results in a slowing of the velocity of the money that leads to a slowing of consumption and business investment, which results in higher unemployment. On the other hand, the use of market values in calculating investment returns would result in more accurately reflecting the plan’s funded status. Lower subscription rates by participants would mean higher consumer consumption and an increase in the velocity of the money. Increased money in circulation would help increase the production of additional outputs and services, which would translate into higher employment.

## Introduction

The Social Security Corporation (the "SSC") has historically calculated investment returns using book values (assets carried at cost on the Corporation's books) that ignores any capital appreciation of asset values but considers capital depreciation. The 4th Actuarial Study was based on book values as provided by the SSC. The use of book values exacerbates the pension plan's under-funded status that leads to requiring a higher subscription rate than necessary to achieve a fully-funded status. Higher subscription rates, in turn, drain money out of the economy that could be used in the production of additional goods and services and, thus, places upward pressure on the country's unemployment rate. The purpose of this paper is to explain these relationships.

## Implications of Using Book Values of Assets to Calculate Rate of Return

Use of book values in calculating portfolio returns creates a series of complications throughout Jordan financial markets and economy as follows[1]:

1. Using book values opposed to market values to calculate portfolio returns results in hidden asset reserves that are ignored in calculating the true value of the portfolio.

2. Underestimated asset values, in turn, exaggerate the plan's under-funded status as determined by its actuarial study. As a result, the actuary tends to overestimate the subscription rate required to make the plan's status fully-funded. [2]

3. Higher than necessary subscription rates drain vital resources from the economy that could be used for investment in plant and equipment that, in turn, puts upward pressure on the country's unemployment rate.

[1] See Appendix for flowchart.

[2] Some social security plans do not report funded status that require use of present value techniques but, instead, report a breakeven point in the future when plan assets will not cover projected liabilities. I recommend that the SSC require its actuary to calculate the plan's funded using present value techniques as a more informative methodology for decision-making purposes.

**Comments:**

I. One can argue that as a result of an increased subscription rate, more money will be saved in retirement scheme, which is called "Contractual Savings," and that these savings will be invested in the financial markets and, eventually, return to the economy. World Bank financial economists analyzed the impact of contractual savings in countries with a small financial sector and conclude that contractual savings can either benefit or detrimental to an economy based on how efficiently the savings are invested.[3] If savings are converted to efficient investments, the result would be greater liquidity to economy, a lower the cost of capital, increases in business investments, and a lower unemployment rate. The problem in Jordan, however, is a lack of necessary financial instruments in the capital markets that generates excess liquidity in short maturity investments, which is not being funneled back into productive uses in the economy. Contractual savings not allocated to the most efficient use hamper the development of financial markets, hinder financial innovation, and lead to an artificially high cost of capital.[4]

II. The slowdown of consumer spending that results from higher than necessary subscription rates exerts a negative effect on business investments and decreases the velocity of money. The velocity of money is the average number of times one unit of money is used to purchase a final product or service during a year.[5] This is illustrated as follows:

$(M \times V = P \times Q)$

where M is the money supply, V is the velocity of money, P is the price level, and Q is the output of goods and services. Based on this equation, velocity of money is directly proportional to output of goods and services produced. If the velocity of the money (circulation of money in the economy from consumer to consumer) increases,

[3] Vittas, Musalem, Impavido, "Contractual Savings in Countries with a Small Financial Sector," World Bank, April 2, 2002.
[4] Introducing new financial instruments would help investing the savings more efficiently than just putting in bank deposits
[5] Gawerntey, Stroup, Sobel "Economics, Private and Public Choice," Harcourt Publishers, 2000, P. 361-362.

then output of goods and services will increase. Likewise, any action that constraints consumer spending (the velocity of the money) by higher than necessary contractual savings translates into a decrease in output of goods and services and an increase in the country's unemployment rate.

III. The above argument had been put forth in a research conducted on the Jordan government bond market by AMIR consultants who suggest that interest rates in the Jordanian market are abnormally high due to structural problems of financial system.[6] The lack of long-term fixed income investments creates distortions in the market and results in higher cost of capital. This higher cost of capital ripples through the economy and results in a decrease in business investment and, ultimately, increases in the unemployment rate.

IV. The method of calculating investment return should recognize the total rate of return including investment income, dividends, and realized and unrealized capital appreciation (or depreciation)[7]. Therefore, the use of market values does not generate any hidden reserves as does the use of book values. In addition, the market value approach reflects more accurately portfolio performance. Once the rate of return is calculated correctly, the funded status of the retirement system would be more accurate that would lead to a more accurate estimate of the required subscription rate. A more accurate subscription rate, which would be lower using market values than book values, would allow workers to keep more of their earnings and increase consumption that would, in turn, increase the velocity of the money. This increased velocity of the money would help businesses prosper by increasing investments and, eventually, reduce unemployment.

[6] BeVier, Biasucci, "Assessment of Government Bond Market, The Hashemite Kingdom of Jordan" Septemebr 2002.
[7] Allen, Everett, Malone, and Rosebloom, "Pension Planning," 4th ed. Richard D. Irvin, 1981, Pgs 158-159

## Conclusion

The choice of using book values over the use of market values in calculating investment returns has implications for the entire Jordanian economy and financial market. Use of book value results in a slowing of the velocity of the money that leads to a slowing of consumption and business investment, which results in higher unemployment. On the other hand, the use of market values in calculating investment returns would result in more accurately reflecting the plan’s funded status. Lower subscription rates by participants would mean higher consumer consumption and an increase in the velocity of the money. Increased money in circulation would help increase the production of additional outputs and services, which would translate into higher employment.

## Appendix: Flow Chart Illustrating the Impact of Book Value versus Market Value in Return Calculations